VERMONT ENVIRONMENTAL BOARD
10 V.S.A. Chapter 151

RE: Upper Valley Regional Landfill
Land Use Permit Application #3R0609-EB

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER (REVISED)

This decision, dated November 12, 1991, pertains to an appeal filed with the Environmental Board on August 28, 1989 by Upper Valley Regional Landfill (UVRL) from a decision of the District #3 Environmental Commission dated August 17, 1989. In that decision, the District Commission denied an application for the operation and expansion of an existing landfill off Route 113 in Thetford. On July 26, 1991, the Board issued a land use permit and a decision approving the reopening, filling, and closing of the landfill.

Subsequent to the issuance of the decision, motions to alter were filed by Ronald Perry on August 23, UVRL on August 22, and the Agency of Natural Resources (ANR) and Thetford Residents Against Statewide Hauling (TRASH) on August 26. UVRL also requested an extension of time to comply with certain conditions of the land use permit. After deliberating on the motions on September 18, the Board requested the parties to file legal argument on two issues. On October 2 and 25, the Board conducted further deliberations. For the reasons explained below, the Board decided to alter its decision and deny a permit.

I. SUMMARY OF PROCEEDINGS

The District Commission denied a permit for operation of the landfill for failure to comply with 10 V.S.A. § 6086(a)1 (noise); l(B) (waste disposal); l(F) (shorelines); 2 and 3 (water supplies); 5 and 9(K) (traffic safety); 7, 9(G), and 9(J) (municipal services); 8 (aesthetics); 9(F) (energy conservation); and 10 (local and regional plans).

A prehearing conference was convened on September 14, 1989, and a prehearing conference report and order was issued on September 21. The parties raised numerous preliminary and procedural issues which were resolved by the Board in written memoranda of decision.

Hearings were convened on June 27, June 28, August 7, August 8, October 11, October 12, November 28, and December 12, 1990, and January 23, January 24, February 21, and May 9, 1991. The following parties participated in the hearings:

The Applicant by Raymond Perra, Esq. and Thomas Rounds, Esq.
Town of Thetford by Jonathan Brownell, Esq. and James Masland
Thetford Planning Commission by Charles Buttrey, Esq.
Upper Valley-Lake Sunapee Council by Bruce Bender
Agency of Natural Resources (ANR) by Mark Sinclair, Esq.
Thetford Conservation Commission by Joe Tofel
Thetford Residents Against Statewide Hauling (TRASH) by Joe Bivins and Susan Aronoff, Esq.
Friends of the Ompompanoosuc by John Carroll
Sheila King
Murray Michaels
Ronald Perry
Dean and Sally Whitlock
Madeline Geoffrey

Proposed findings of fact and conclusions of law were filed by the parties subsequent to the hearings. On May 9, 1991, the Board convened a hearing at which the parties presented oral argument and answered questions from the Board.

The Board conducted deliberative sessions on May 9, May 28, June 13, June 27, and July 8, 1991. On July 8, 1991, the Board declared the record complete and adjourned the hearing. The decision was issued on July 26. In response to motions to alter filed by parties, the Board conducted deliberative sessions on September 18, October 2, and October 22, 1991. This matter is now ready for decision. To the extent any proposed findings of fact and conclusions of law are included below, they are granted; otherwise, they are denied.

II. SUBSTANTIVE ISSUES

The appeal raises substantive issues with regard to the following criteria of 10 V.S.A. § 6086(a):

Whether the landfill will comply with 10 V.S.A. § 6086(a) 1 (noise); l(B) (water pollution); 2 and 3 (water supplies); 5 and 9(K) (traffic safety); 7, 9(G), and 9(J) (municipal services); 8 (aesthetics), 9(F) (energy conservation), and 10 (local and regional plans).

III. PARTY STATUS

Party status was granted to the following persons and entities:

Dean and Sally Whitlock - Criteria 1 (air), l(B), l(F), 2, 3, and 8 (aesthetics) as adjoining property owners pursuant to Rule 14(A) and Criteria 5 and 9(K) pursuant to Rule 14(B) (1).

Sheila King and Murray Michaels - Criteria 1 (air), l(B), 2, 3, and 8 (aesthetics) as adjoining property owners pursuant to Rule 14(A) and Criteria 5 and 9(K) pursuant to Rule 14(B) (1).

Ronald and Nancy Perry - Criteria 1 (air), l(B), l(F), 2, 3, 5, and 9(K) pursuant to Rule 14(B)(l).

Madeline Geoffrey - Criteria 1 (air), l(B), 2, 3, 5, 8 (aesthetics), and 9(K) pursuant to Rule 14(B)(l).

Thetford Conservation Commission - Criteria 1 (air), l(B), 2, 3, and 8 (aesthetics) pursuant to Rule 14(B)(2).

TRASH - Criteria 1 (air), l(B), l(F), 2, 3, 5, 7, 8 (aesthetics), 9 (F), 9(G), 9(J), 9(K), and 10 pursuant to Rule 14(B) (2).

Friends of the Ompompanoosuc - Criteria l(B) and l(F) pursuant to Rule 14(B)(2).

IV. MOTIONS TO ALTER

The Board received motions to alter from UVRL, ANR, TRASH, and Ronald Perry, pursuant to Board Rule 31.

A. WRL

UVRL seeks correction of Condition 6 of the Permit that prohibits activities between the existing landfill footprint and either the Ompompanoosuc River or the outlet stream from Lake Fairlee. WRL points out that the closure plan approved by ANR provides that soil for closure purposes will be removed from the area in which activities are prohibited under Condition 6.

UVRL requests that instead of planting eight- to ten-foot white pine trees planted six feet on center along the eastern side of the landfill property to screen the landfill, it be allowed to plant forty trees at seven-foot intervals for 280 feet and later remove every other tree and replant them at the ends of the original tree line to create a screen of trees 560 feet in length.

UVRL requests alteration of Condition 8, which requires WRL to maintain evidence of financial responsibility in the amount of $209,000 to make it clear that the amount that secures closure costs need not be maintained at $209,000 but may be drawn down as used for closure.

WRL requests a clearer designation of the location of the southerly boundary of the zone of potential influence of the landfill shown as Exhibit EB-1.

WRL asks whether compliance with any condition of the Permit requires that UVRL comply with all conditions of the permit.

UVRL asks whether the requirements of Conditions 10 and 12 relating to the new water system are imposed in perpetuity.

UVRL seeks an extension of the time periods for compliance with certain permit conditions for a reasonable time after it has received a response to the above requests for alteration and clarification.

B. ANR

ANR requests the Board to require the submission of a revised closure plan to ANR and the Board within 90 days after commencement of operation of the landfill. ANR contends that a new closure plan is necessary to revise the final elevations in order to reflect the lesser volumes of waste estimated to be disposed of by July 1, 1992 than had been estimated.

C. Ronald Perry

Mr. Perry requests the Board to alter its decision and deny a permit for failure of UVRL to meet its burden of proof in demonstrating compliance with Criteria l(B), l(F), 5, 7, 9(J), and 9(K). Mr. Perry argues that the findings in the Board's decision identify the deficiencies in the application that require a denial. He points out that these deficiencies include failure to comply with State and federal regulations on water pollution and traffic, the lack of funds for closure if final closure grades are not met, and lack of information on whether development of another alternative water supply is possible and no information concerning the quantity and quality of water, distribution plans, and a legal framework to protect the people whose water supplies have become contaminated by the landfill.

Mr. Perry also requests the Board to alter Findings 46 and 47 because, he contends, the fact that the levels of contamination increased after the landfill expanded its operation in 1988 demonstrates that adding trash to the landfill will increase, rather than decrease, the leachate even in the short term.

Mr. Perry also believes the permit should be denied because the requirements in the permit for UVRL to plan, design, and implement changes after issuance of the permit will result in the denial of his right to participate in decisions that have a direct effect on his property and interests.

D. TRASH

TRASH requests the Board alter its decision and deny the permit for the following reasons:

1. By issuing a permit with conditions to be performed after issuance of the permit (and the close of the hearings), other parties are denied their right to participate in the project design, even though they will likely be affected.

2. By obtaining a permit, WRL is eligible to obtain a Provisional Certification under 10 V.S.A. § 6605d. A Provisional Certification would allow WRL to operate outside of any Act 250 requirements since the law authorizes the operation of landfills without the need for Act 250 approval.

3. The Ground Water Protection Rule and Strategy (GWPR) constitutes an "applicable regulation" under the section of Criterion l(B) that requires compliance with "any applicable health and environmental conservation department regulations regarding the disposal of wastes," and the landfill project does not comply with the GWPR.

4. The landfill requires a discharge permit prior to operation.

5. Having found that the landfill has created undue water pollution, the Board should conclude that continued operation of the landfill will create undue water pollution. The language in Criterion 1, "will not create undue water pollution," was not intended to mean that existing undue water pollution should be ignored.

6. UVRL did not meet its burden of proving that no undue water pollution will result. There is insufficient evidence in the record to support the Board's finding that adding trash for a short period will not appreciably increase the contamination. It has already been demonstrated that additional trash will make the existing pollution worse because during the year that the landfill greatly expanded its operation, the levels of contamination in monitoring wells increased.

7. Criterion l(F) is violated because there is no necessity for reopening and filling the landfill with trash, and the lack of information in the record about the effect of the landfill on the river was stated in the Board's findings and requires a denial.

8. Affirmative conclusions on Criteria 2, 3, and 9(G) cannot be made because UVRL has provided no evidence that a source for a new water supply is available and none of the details concerning development of a new water system and long-term operation and management of the system have been planned or provided to the Board.

9. The Board found that WRL did not demonstrate compliance with Criteria 5 and 9(K) concerning traffic.

10. The Board did not adequately address Criterion 9(J) because it did not consider the unnecessary fuel consumption from hauling large amounts of trash over distances greater than required, or maximizing recovery of materials through reuse and recycling.

11. The project does not comply with either the Town Plan or the Regional Plan. After citing sections of the Town Plan that would clearly prohibit a landfill in the area in which it is located, the Board concluded that it nevertheless complies. The Board completely ignored sections of the Regional Plan that would compel the conclusion that the landfill does not conform with that plan.

After receiving the motions to alter, the Board requested the submission of argument from the parties on the questions of whether a discharge permit is required and whether the authority to obtain a Provisional Certification and operate the landfill pursuant to 10 V.S.A. § 6605d will supersede conditions in a land use permit requiring closure of the landfill on July 1, 1992.

Responses were received by TRASH, ANR and UVRL. UVRL, through its attorney Raymond Perra, responded to the latter question with the following statement: "It is obvious from [the language of the statute] that a provisional certification may supercede [sic] the conditions of a land use permit. It is entirely consistent with the exemption of landfills which obtain a provisional certification from the need to obtain a land use permit."

E. Board Response

Board Rule 31 is entitled "Reconsideration of Decisions." Rule 31(A) provides that within 30 days of final decision, parties may file "such motions to alter as may be appropriate with respect to the decision." Rule 31(A) also states that the Board or district commissions may issue an altered decision or permit on their own motion, and that "alterations by board or district commission motion shall be limited to instances of manifest error, mistakes, and typographical errors and omissions."

The rule does not define what is an "appropriate" motion to alter as that term is used in the first paragraph of the rule. In previous decisions, the Board has stated that it is inappropriate to use a motion to alter to reopen a hearing or provide new evidence to the Board after denial of a permit or to raise new arguments. See, e.g., Re: Finard-Zamias Associates, #1R0661-EB, Memorandum of Decision (Jan. 16, 1991); Re: Swain Development Corp., #3W0445-2-EB, Memorandum of Decision (Nov. 8, 1990); Re: Berlin Associates, #5W0584-9-EB, Memorandum of Decision (April 24, 1990).

The Motions to Alter filed by the parties are appropriate under Rule 31(A). The parties are not asking the Board to reopen the hearing or to consider new evidence.

ANR's Motion to Alter is based upon the need for a new closure plan to revise final elevations due to the smaller amount of trash that may be disposed of because of the reduced time available. A revision to the permit would be necessary.

UVRL's Motion to Alter seeks clarifications of and revisions to permit conditions.

The issues raised by TRASH and Ronald Perry are not new issues; they are all contained in documents filed with the Board. The issues of whether the landfill needs a discharge permit and whether it complies with the Water Quality Standards and the Ground Water Protection Rule and Strategy

were raised in TRASH's memorandum of law concerning Criterion 1(F) (Section B, p. 5) and 1(B) (Section A, pp. 14-18). The arguments concerning insufficient information to support affirmative findings and conclusions were raised in documents previously submitted.

Further, the Board believes that Rule 31(A) is an appropriate vehicle for parties to seek clarification of permit conditions which may not be clear and to correct or modify permit conditions as may be necessary, and to argue that the Board's findings are not based upon the evidence or that the conclusions of law are incorrect. In light of the fact that the parties participating pursuant to Board Rule 14(B) do not have standing to appeal to the Supreme Court, it is particularly important that parties have an opportunity to request the Board to reconsider its decision to ensure that it is not erroneous.

For the reasons explained below, the Board grants the motions to alter filed by TRASH and Ronald Perry. The decision has been revised accordingly and the permit is denied. As a consequence, the issues raised in the motions to alter filed by ANR and UVRL are moot, as is UVRL's motion for extension of time.

In its consideration of whether to grant a permit for the landfill, the Board was very narrowly persuaded that, notwithstanding the undue pollution that had already occurred, limited operation of the landfill only until July 1, 1992, with strict conditions, would not unduly endanger the public health and other values protected by Act 250.

The Board was convinced, however, that this time limit represented the absolute boundary beyond which continued operation would begin to cause undue, and thus unacceptable, pollution. Central to the decision to grant a permit was the Board's ability to control orderly closure of the landfill within a year and ensure the provision of an uncontaminated public water supply for the people whose water supplies have been contaminated by the landfill.

However, because of the possibility of continued operation under a provisional certification authorized by 10 V.S.A. § 6605d, the Board cannot control the date of closure. Such a continuation, in the Board's view, would move UVRL's proposal from being marginally acceptable to a clear violation of Act 250's standards and a threat to the public health, safety, and welfare.

Furthermore, the Board erred in considering only the pollution that may occur in the future from less than one year of operation. Because UVRL's Act 250 permit expired in 1986 and the landfill operated without a permit until it closed in 1989, the Board must consider the effect of the landfill operation retroactively as well as prospectively. This is consistent with the requirement in Act 250 that a permit be obtained prior to construction and operation, and with previous Board decisions requiring review as of the date that construction begins rather than the date that a permit is applied for. E.g., Re: Bernard and Suzanne Carrier, #7R0639-EB, Memorandum of Decision (Dec. 17, 1990). An important reason for this requirement is that the purpose of Act 250 is to regulate land use activities to ensure they do not unduly harm the environment. See "Findings and Declaration of Intent," No. 250 1969 Vt. Laws § 1 (Adj. Sess.); 10 V.S.A. § 6089(a). Impacts that occurred during the time that a project operated illegally should not be left unreviewed and unmitigated. If, after review under the 10 criteria, a permit is issued, it may contain conditions which mitigate any adverse effects caused to the environment during the period of unauthorized operation. On the other hand, if the application fails to satisfy the criteria and a permit is denied, the applicant may be required to restore the site to its condition prior to commencement of the activity.

Accordingly, the Board has reviewed the evidence in light of the effect of the landfill under the applicable criteria for the period January 1, 1986 to September 1989 in addition to the Applicant's request to reopen and close the landfill. On that basis, having found that the contamination of groundwater that occurred since 1986 is undue pollution, the Board must conclude that this project will cause undue water pollution.

The Board considered the arguments of TRASH in its motion to alter that a discharge permit is needed and that the Ground Water Protection Rule and Strategy is applicable and concludes that UVRL does need a discharge permit and the Ground Water Rule is applicable. The Board also concludes that the landfill does not meet either the Water Quality Standards or the Ground Water Rule.

With regard to the other criteria at issue in this appeal, the Board is persuaded by TRASH and Ronald Perry that the lack of information from the Applicant and the substantial need for additional plans and information dictates a denial of the permit rather than issuance of a permit that allows numerous submissions at a later date. Act 250 states: "Before

granting a permit, the board or district commission shall find that the subdivision or development [complies with the ten criteria]." 10 V.S.A. § 6086(a) (emphasis added). As the Board stated in Re: Sherman Hollow, #4C0422-5-EB (Revised), Findings of Fact, Conclusions of Law and Order (Feb. 17, 1989):

> Act 250 specifically requires the Board to make positive findings prior to the issuance of a permit. . . Furthermore, a procedure such as the Applicants suggest, with review and approval of pesticides taking place outside of the Act 250 process, would contravene the requirements that all parties to Act 250 proceedings have a right to contest information supplied and positions taken by other parties. See 10 V.S.A. § 6085; 3 V.S.A. § 809.[1]
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> The Applicants argue that many of the Board's concerns can be addressed simply by the Board's retaining jurisdiction over the project and putting conditions in the permit to require that certain information be provided to the Board or District Commission at a later date. ... This cannot be done, however, with an application that contains substantial deficiencies. There would be no purpose in requiring review prior to issuing permits if the Board ... could simply require all lacking information to be submitted after the permit is issued.

Id. at 8-9.

Moreover, without a closure plan that accurately indicates final closure profiles, the Board has insufficient information to determine whether undue water pollution will result from the closing of the landfill. The amended closure plan dated November 7, 1990 assumes that the landfill will operate for 18.7 months, beginning in January, 1991 and ending July 1, 1992. ANR now realizes that the operation of the landfill under the Interim Certification would be for a shorter period, and that that would require amending the closure plan to revise the final contours. As with the other

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[1] Section 809(c) of the Administrative Procedure Act states: "Opportunity shall be given all parties to respond and present evidence and argument on all issues involved."

information which the Applicant has not submitted, a revised closure plan would require further review by the Board and the opportunity for other parties to respond to the plan. The method of achieving closure of the landfill is an important aspect of this application. Absent a realistic closure plan for the Board to review, the Board must conclude that there is insufficient information to determine compliance with Criterion 1.

The deficiencies in this permit application are amply identified and described in the Findings of Fact below, which are, with few exceptions, the same findings issued with the Board's original decision in this matter. As described in the discussion above, a permit that requires submission of substantial plans and information after issuance of the permit would require that the Board provide an opportunity for a hearing for all parties to "respond and present evidence and argument." 3 V.S.A. § 809. In addition to the legal requirements, it is better policy and vastly more efficient for applicants to provide all the necessary information prior to issuance of a decision, and this has been the Board's consistent policy. See, e.g., Re: New England Land Associates, #5W1046-EB, Findings of Fact, Conclusions of Law, and Order (Oct. 1, 1991).

IV. FINDINGS OF FACT

A. Project History and Description

1. The proposed project consists of the continued oneration, expansion, and closing of a landfill of approximately five acres on a 117-acre tract of land off Route 113 in the Town of Thetford, just south of the Village of Post Mills. The East Branch of the Ompompanoosuc River (also known as the Lake Fairlee Outlet) flows to the north along the eastern border of the site where it joins the Ompompanoosuc River. The Ompompanoosuc River flows to the west along the northern boundary of the site and then flows south to the west of the landfill. The Ompompanoosuc River crosses Route 113 near the Malmquist Mill. A number of houses are located to the west and the southwest of the landfill between the landfill and the river.

2. The landfill obtained an Act 250 permit in November, 1971 and began operating on May 1, 1974. The landfill's Act 250 permit expired in 1986 and thereafter the landfill operated without a permit. During that period, the landfill expanded its operation to accept trash from

Rutland and Bennington Counties. The Applicant applied for a permit to authorize its operations and continued to operate the landfill until September 1989 at which time the Vermont Attorney General obtained an injunction after the permit application was denied by the District Commission.

3. Between January 1, 1981 and January 1, 1986, the landfill operated under a Disposal Facility Certification from ANR. The certification authorized the disposal of solid waste from the Vermont communities of Thetford, West Fairlee, Vershire, Strafford, Norwich, and Fairlee, and Lyme, New Hampshire. On July 31, 1987, ANR issued a Transitional Operation Authority (TOA) which allowed for the continued operation of the facility. On March 21, 1988, ANR amended the TOA to include Orford, New Hampshire in the geographic area served by the landfill. On August 25, 1988, the TOA was amended to include the Vermont counties of Addison, Bennington, and Rutland and on March 8, 1989 the TOA was further amended to extend the authority to serve these counties to January 1, 1990.

4. From the summer of 1988 until it closed, the landfill accepted trash from Bennington County and from June 1, 1989 accepted trash from Rutland County, in addition to the trash it accepted from towns in the closer Upper Valley area. The landfill was charging a disposal fee of approximately $40 per ton of solid waste.

5. The landfill was operated by the Barker-Sargent Corporation until 1987 when the current operator, Upper Valley Regional Landfill Corporation, was organized by Frank Barker and Robert MacNeil. Robert MacNeil is also the president of Northeast Waste Services, Ltd., which operates a trash hauling business in White River Junction, Vermont. Northeast Waste Services, Ltd. services the following towns in Vermont: Hartford, Hartland, Woodstock, Tunbridge, Norwich, and Thetford, and the following towns in New Hampshire: Meriden, Plainfield, Lebanon, Hanover, Lyme, Canaan, Enfield, and Grafton.

6. The landfill received an Interim Certification from the Agency of Natural Resources, Department of Environmental Conservation, Division of Solid Waste, on December 5, 1990. The Interim Certification authorizes the UVRL to accept solid waste from the Vermont communities of Fairlee, Norwich, Shrewsbury, Strafford, Thetford, Tunbridge, Vershire, and West Fairlee, and to accept up

to 80 tons per day of solid waste from the New Hampshire member communities of the Upper Valley-Lake Sunapee Council which include the towns of Canaan, Charlestown, Enfield, Grafton, Grantham, Hanover, Lebanon, Lyme, Orange, Orford, Piermont, and Plainfield, and the Pemi-Baker Solid Waste District towns of Ashland, Campton, Dorchester, Ellsworth, Groton, Plymouth, Rumney, Thornton, Warren, Waterville, and Wentworth. Some of the member towns will not be using this landfill because they have their own landfills or have made other arrangements.

7. The Applicant proposes to operate the landfill under an agreement between the Selectmen of the Town of Thetford and the Applicant entitled "Landfill Operation Agreement" and dated January 22, 1991. According to the Agreement, the landfill will be open from 5:40 a.m. to 4:00 p.m. Monday through Saturday for commercial vehicles and from noon to 3:00 p.m. on Tuesdays and Thursdays and from 8:00 a.m. to 2:00 p.m. on Saturdays for residential users. The Agreement also provides that a "Waste-Stream Enforcement Officer" will be hired by and be responsible to the Thetford Board of Selectmen. The Officer will be authorized to inspect any aspect of waste handling to determine compliance with the Agreement and with the Interim Certification. The Officer's job includes handling complaints about noise, dust, and odor by reporting complaints to the Selectmen and the operators of the landfill.

B. Criteria 1 (air & noise pollution) and 8 (aesthetics]

8. The area in the immediate vicinity of the landfill consists of single family residences, a small farm, a small historic mill, and undeveloped land. The Ompompanoosuc River surrounds the houses and adds to the scenic qualities of the area. The Village of Post Mills also has scenic qualities.

9. The landfill is located at a higher elevation than Route 113. The current landfill profile is designed to rise by another eight to ten feet. The landfill entrance has an unkempt look, with an unused sandpit and a wire strung between two posts.

10. The existing buffer strip along the westerly side of the landfill will be maintained. Trees have been planted along the access road.

11. Odors emanated from the landfill in the final summer of operations after the landfill had grown substantially in height.

12. Dust from the landfill access road has been a problem for the neighbors.

13. According to the Applicant's proposal, in the morning between the hours of 5:40 a.m. and 6:45 p.m., six days a week, as many as 12 vehicles twice could travel past the homes in the vicinity of the landfill. The noise of the trucks has wakened some of the people who live near the landfill.

14. The Landfill Operation Agreement establishes rules for commercial haulers to reduce truck noise. These include prohibitions against heavy braking, Jake brake operation, heavy forced downshifting, and horn-blowing. The Interim Certification requires that the Applicant's equipment must be maintained in good working order at all times.

15. Litter from small trucks using the landfill has been a problem along Route 113. To control litter, no uncovered commercial vehicles, and no uncovered private vehicles that contain any loose material, will be permitted to enter the landfill. The daily operating face of the landfill will be kept as small as possible. At the end of each day, six inches of cover will be put over the waste and compacted.

16. The closure plan calls for covering the waste with two feet of recompacted soil and a six-inch layer of topsoil, and planting vegetation on it.

C. Criteria 1(B) (waste disposal) and 1(F) (shorelines)

17. The landfill is located on a topographic ridge that falls off to the west to the Ompompanoosuc River and to the east to the Lake Fairlee outlet stream.

18. The upper layer of the landfill site is approximately 40 feet thick. Beneath the upper geologic layer is fractured bedrock.

19. The soils in the upper layer are classified by the Soil Conservation Service Soil Survey as Windsor and Winooski, which primarily consist of sand with some gravel. The Soil Conservation Service considers these soils types unsuitable for a sanitary landfill because they have high

permeability and therefore will not adequately attenuate the movement of contaminants. The actual permeability and porosity of the soils have not been tested.

20. Groundwater occurs in both the upper layer and the bedrock. The evidence suggests that the direction of groundwater flow in the upper layer is westerly. However, because the height of the groundwater beneath and in the close vicinity of the landfill has not been documented, it is not known whether there is groundwater flow to the east as well.

21. Fifteen soil borings with ten installed monitoring wells were drilled during a 1980 study of the landfill.

22. In 1989, as part of the Vermont Landfills Assessment Program, a study of the landfill was undertaken by GEI Consultants, Inc. and Dubois & King, Inc. (the GEI Study). On November 8, 1990, a Final Data Summary Report for the landfill was submitted to ANR. This report consists of a compilation of the information known about the landfill as of the summer of 1989.

23. As a result of its site investigations, GEI recommended that four additional monitoring wells be installed; monitoring wells MW-101S, MW-101D, MW103, and MW-104 were installed during December 1989.

24. Subsequent to GEI's investigations, two monitoring wells were installed in bedrock at the site (BR-1 and BR-2) northwesterly of the landfill. Two new bedrock wells were subsequently installed. BR-3 is drilled adjacent to a shallow monitoring well known as MW-1, next to the landfill entrance road. BR-4 is located west of the landfill directly adjacent to the river. No bedrock monitoring wells were ever installed directly south of the landfill. The purpose of the bedrock wells is to define the groundwater flow direction in bedrock.

25. The State of Vermont Ground Water Protection Rule and Strategy, adopted in September, 1988, establishes two standards for certain substances in groundwater, based upon the United States Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCL) for drinking water. The Rule establishes two different maximum limits for each substance: the preventive action limit, and the enforcement standard. The preventive action limit is one-half the enforcement standard except it is one-tenth the enforcement standard for substances that have

carcinogenic, mutagenic or teratogenic properties. A different response is called for depending upon whether a preventive action limit or enforcement standard is exceeded for a specific substance.

26. Solid waste generally contains approximately .5 to .6 percent household hazardous wastes and approximately .5 to 1 percent hazardous wastes from small-quantity commercial generators. Household trash contains between 1 and 2 percent by weight of toxic or otherwise harmful materials, including organic chemicals)solvents and pesticides), metals (lead, cadmium, arsenic, and mercury), bacteria, and viruses. Many of the toxic substances in the leachate are carcinogenic (capable of causing or promoting cancer), mutagenic (capable of causing genetic mutations), or teratogenic (capable of causing birth defects).

27. Leachate is created when liquid makes contact with materials containing toxic substances. Leachate enters the groundwater either by the movement of precipitation downward through a landfill, which carries contaminants into the soils below the landfill and eventually into the groundwater, or by saturation of the refuse by the ground water when direct contact is made between the trash and an underlying aquifer.

28. Leachate from the landfill has contaminated groundwater in the vicinity of the landfill. Groundwater standards have been exceeded in the surficial monitoring wells 101, 1, 2, 7, 8, 9, and 10; in the bedrock monitoring wells 1, 2, 3, and 4; in the neighboring household shallow wells or springs belonging to Braley, Gunkel, Whitlock, and King/Michaels; and in the household bedrock wells belonging to Perry and Whitlock.

29. Between 1986 and 1988, no volatile organic chemicals were detected in any of the monitoring wells. Between September 1989 and November 1990, sixteen different volatile organic chemicals were found in surficial monitoring wells. Several of these occurred on several different testing dates and at more than one monitoring well. The multiple-occurring contaminants include methylene chloride (six occurrences, two wells); benzene (seven occurrences, four wells); tetrachloroethene (three occurrences, two wells); 1,1 dichloroethene (five occurrences, two wells); and 1,1,1 trichloroethene (eight occurrences, three wells). For the contaminants for which a standard exists, there were 19 instances in which

the enforcement standards were violated. Four of the volatile organic chemicals found in surficial monitoring wells are considered carcinogenic, mutagenic, or teratogenic under the Ground Water Rule, some of which were found at levels ten or more times as large as their enforcement standards.

30. On November 30, 1990, methylene chloride occurred in Monitoring Well MW-7 at a level more than 70 times its enforcement standard. On September 25, 1990, iron was found in MW-101 at more than 25 times its enforcement standard and in MW-7 at more than ten times its enforcement standard. On the same date, manganese was found at more than 40 times its enforcement standard at MW-101 and at more than 80 times its enforcement standard at MW-7.

31. Test results from the bedrock wells were not available until February 1990 and only from two wells at that time. On September 25, 1990 all four bedrock wells were tested. All of the bedrock monitoring wells showed very high levels of iron and manganese; levels of sodium were relatively high at BR-2 in February, 1990 and at BR-3 and BR-4 in September, 1990. Three of the four wells have recorded instances of volatile organic chemicals.

32. The same five chemicals that were found in the bedrock wells were also found in one or more of the surficial monitoring wells. This supports the likelihood of interconnection between the bedrock and the surficial system.

33. The Applicant and ANR interpret groundwater flow patterns in the bedrock to mean that the flow is predominantly westerly. However, other factors that the Applicant and ANR did not sufficiently investigate could cause ground water to flow in other directions. For example, while the Applicant demonstrated that the bedrock aquifer transfers groundwater by way of fractures, and provided information that the fractures have preferred orientations, mostly to the north and south, the Applicant did not define the vertical gradients in the bedrock. The Applicant also did not determine whether the bedrock is isotropic (the same permeability in three mutually perpendicular directions) or anisotropic (different permeability in different directions), but assumed the former. If the bedrock is anisotropic, then

the groundwater direction cannot be established simply by drawing flow lines perpendicular to the groundwater contours, as the Applicant did in its analysis.

34. The Applicant did not evaluate the elevation of groundwater beneath the landfill in order to determine whether there is a mound in the groundwater. Groundwater mounds are frequently found under landfills. Groundwater flow direction would be influenced if there were a mound in the aquifer beneath the landfill, with the result that the groundwater could be flowing in a variety of directions. If a groundwater mound intersects the refuse in the landfill, the amount of leachate production likely would be increased, with resulting increased filtration of leachate into the groundwater. The existence of a mound could be determined by monitoring in key locations near the landfill.

35. The location of the groundwater divide is also inconclusive due to insufficient testing. If the groundwater divide is underneath the landfill instead of along the eastern perimeter of the site as the Applicant and ANR concluded without thorough investigation, then there is a high likelihood that some groundwater from below the landfill travels eastward toward the Lake Fairlee outlet stream. This distance is considerably less than that for the westerly flow to the river; if groundwater travel time is correspondingly reduced, the attenuation of pollutants before they reach the river is also reduced. Testing to determine the maximum water table elevation under or close to the landfill, which would indicate the location of the groundwater divide, could have been done but was not.

36. Insufficient information was provided concerning the influence on groundwater flow of the operation of the replacement water supply.

37. Until October, 1988, no monitoring of the Ompompanoosuc River to the west of the landfill took place. The appropriateness of the sampling locations later installed in an area supposedly "downstream" from the landfill for the purpose of detecting contamination in the river is questionable since without knowing the flow directions of groundwater, it cannot be known where the sampling location is in relation to the landfill plume of contamination.

38. Samples of surface water from the Ompompanoosuc River indicate that certain substances associated with landfills, such as copper, iron, manganese, chloride, and sodium, were higher downstream from the landfill than upstream. For example, manganese and iron were found at the Ompompanoosuc surface water monitoring location downstream from the landfill on several different occasions, and 3,310 ug/l of iron were detected in BR-4 which is located approximately 12 to 15 horizontal feet from the Ompompanoosuc.

39. Substantial evidence was presented about the velocity of the groundwater and the time it takes to reach the river, with estimates of travel time from 14 months to several years. All of the evidence, however, was based upon assumptions the validity of which is unproven because neither the permeability nor the effective porosity of the soils was established. Permeability is the property which indicates the potential ease and rapidity with which water can move. Porosity is the quantity of soil or rock pore spaces; effective porosity is the volume of useable pore spaces. A knowledge of permeability, porosity, and effective porosity is essential for determining the velocity and travel time of groundwater. Because permeability is a highly variable property and may range over several orders of magnitude, it must be measured in the field in order to estimate travel time on the basis of hydraulic gradients. Permeability could be determined by proper tests; the measured permeability could then be used, along with hydraulic gradient and porosity, to evaluate groundwater velocity and travel time.

40. Even if, as the Applicant claims, the velocity of groundwater movement is sufficiently slow that any leachate that is reaching the river is adequately attenuated and diluted, the Applicant provided no information on other parameters such as whether the biota and soils in the river are storing and concentrating contaminants.

41. Although the Applicant claims to have followed Environmental Protection Agency methodology for sampling the ground and surface water, the Applicant provided no documentation of the procedures actually followed. Proper documentation of the details of the sampling is critical for a meaningful analysis of the reliability of the data.

42. The most recent groundwater testing shows that the zone of degradation from the landfill has enlarged. Extensive additional monitoring would be required to accurately delineate the hydrogeologic conditions present at the site and to ensure that contaminants emanating from the site are not causing significant pollution to the Ompompanoosuc River and the Lake Fairlee outlet stream.

43. Production of leachate is reduced when a landfill is capped because infiltration of rainwater into the landfill is reduced. Typically, a cap is placed over the top of the landfill after the landfill has ceased operation. The cap is composed of either clay or plastic, or both, and is intended to serve as an umbrella, diverting rain off the landfill so that it does not infiltrate into the landfill. Any leachate remaining in the landfill will continue to discharge into the groundwater after the landfill is capped, and it would be expected to take several years for movement of leachate into groundwater to cease. Once the landfill is capped, however, no more leachate should be generated, unless a groundwater mound causes direct contact between the trash and the groundwater.

44. The Agreement between the Applicant and the Town of Thetford contains a list of waste that may not be disposed of at the landfill, consisting of the following: Explosives; septage and sludge; stumps or heavy wood exceeding eight inches in cross-section; asbestos or asbestos-containing materials without specific, case-by-case prior authorization, education and procedures required by State law; infectious waste; barrels, drums, liquid receptacles with covers containing any liquid residue of any hazardous waste, including but not limited to paint or oil; car or truck chassis; unregulated hazardous waste produced by small-quantity generators; hazardous waste as defined in federal or State law; and any material in the Applicant's judgment deemed to be harmful to its personnel or equipment. The Agreement also states that wet cell batteries and tires may be accepted at the landfill for sorting and transport elsewhere but may not be disposed of in the landfill.

45. It is possible that the short-term addition of trash followed by the immediate capping of the landfill would slow down the generation and movement of the leachate because the additional trash may absorb some of the infiltrating precipitation in the landfill and not lead to the immediate generation of substantial new leachate.

It appears from the evidence of increasing contamination in the monitoring wells, however, that the leachate production did not decrease during the time that the landfill received the additional trash from Bennington and Rutland Counties.

46. Installation of a capping on the landfill will reduce the amount of rainfall entering the landfill and thus the amount of leachate created thereafter from precipitation will be minimal. The landfill could close prior to reaching final closure profiles with trash by using soil instead of trash. It would also be technically feasible to change the contours of the landfill by moving the existing trash so the landfill could be capped without fill. There is some concern, however, about problems associated with moving trash, such as exposing workers to hazardous substances such as gas and asbestos.

47. The Applicant submitted a closure plan dated March 1990 (Exhibit #A-76) and amendments to the closure plan dated November 7, 1990 (Exhibit #A-97). The March closure plan was based upon using three phases to bring the landfill to final contours, and the November amendments eliminated Phase III and the volume of trash that was to be disposed during that phase.

4%. The Interim Certification requires closure and post-closure to be performed in accordance with the March 1990 closure plan and does not refer to the amended closure plan of November 1990.

49. According to the amended closure plan, 59,511 cubic yards of refuse are needed to complete Phase I and 52,770 cubic yards are needed to complete Phase II, at which time final profiles will be achieved. At 6,000 cubic yards per month, it will take 18.7 months to reach final profiles of Phase II with 112,281 cubic yards of trash. This amounts approximately to an average of 80 tons per day.

50. The amended closure plan needs to be amended further to reflect the actual remaining time for achieving closure, which is less than 18.7 months.

51. The Applicant intends to excavate the cover material needed for the two closure phases from an area east of the landfill. Testing of this material indicates that there is a sufficient amount of silt-clay soil in that area that meets the permeability standards required by

the State of Vermont for cover material. If final profiles are not achieved with trash, fill will probably have to be used. This will involve additional closure costs.

52. The final cover design calls for two feet of recompacted soil which would be applied in three eight-inch lifts. Low permeability soils will be used to prevent infiltration of rainwater. The purpose of the final slope contours is to facilitate run-off of rainwater. Six inches of soil for sustaining vegetation will be applied and the cover will be planted with grass to protect the top and to cause transpiration of liquid back into the atmosphere. Gas vents will be installed to allow the escape of any landfill gases.

53. The post-closure plan approved by ANR consists of regular inspection of the cap and periodic monitoring of ground and surface water for a period of twenty years after the landfill is closed and capped.

54. The Applicant estimated the total closure and post-closure costs to be approximately $204,645. This cost estimate does not cover the costs of bringing in fill that would be necessary if the landfill had to close before final closure profiles were reached, the costs of purchasing and bringing in capping material in the event the on-site soils are insufficient, or the costs of developing, constructing, and maintaining a new water supply for the neighboring households.

55. The Applicant is required by Condition 9 of the Interim Certification to provide financial surety in the amount of $209,000 "or other sum as determined by the Secretary and as provided for under the Rules or the conditions of this Certification ...."

56. There is insufficient available trash in Vermont to achieve the necessary 80 tons per day. Therefore, the landfill will accept trash from some of the New Hampshire member communities of the Upper Valley-Lake Sunapee Council and the Pemi-Baker Solid Waste District.

D. Criteria 2 and 3 (water supplies)

57. The following contaminants have been found in the household water supplies at levels which exceed groundwater standards and MCLs: manganese, mercury, sodium, iron, lead, zinc, trichloroethene, tetrachloroe-

thene, and benzene. Additional metals and volatile organic compounds associated with landfills were also detected in the neighboring water supplies at various levels.

58. The Certification issued to the landfill by ANR on September 28, 1981 required the landfill to develop an alternative water supply for use by households whose water supplies had been contaminated by the landfill and to have it completed by October 15, 1984. The required water system did not become operational until 1988.

59. The 1981 Certification also required the landfill-to "establish the legal framework and Agreement necessary for establishment of a property owners [sic] association which will be responsible for operation and maintenance of the replacement water system on or before October 15, 1984." No agreement has been provided to the current users of the replacement water supply.

60. The following households are hooked up to the replacement water supply: Perry, Brows (formerly Whitlock), Gunkels, Braley, Michaels/King, and Robinson. Twenty-seven people in these households are using the water supply. The Demers family, consisting of three people residing at Madeline Geoffrey's house, has the right to use the replacement water supply but has chosen not to. The total number of people who currently have the right to be connected to the system is 30.

61. If all the properties in the zone of contamination identified by the Applicant and ANR which are currently eligible to hook up to the alternate water system were subdivided to their maximum allowable build-out, a total of 68 additional residential lots eligible to hook up to the alternate water system would be created. The actual zone of influence from the landfill, however, might be more extensive and include more properties.

62. A permit is required from the Water Supply Division of ANR for operation of a public water system, which is defined as any system for the provision to the public of piped water for human consumption with at least 10 service connections or which regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

63. ANR stopped testing the household wells at the time that the households hooked up to the alternate well. The Demers' well has continued to be tested and tests were done in September 1986, June 1987, October 1988, August 1989, and May 1990.

64. On May 11, 1990, a pump test was conducted of the replacement water supply well. Pumping for 4.5 hours at approximately 14 gallons per minute resulted in a drawdown of the Demers' bedrock well and of bedrock monitoring well BR-3 (located near the landfill entrance). This indicates a likely hydraulic connection between the landfill, the Demers' well, and the replacement water supply well.

65. The replacement water system was tested by the State on July 10, July 25, and August 17, 1990. The tests confirmed the presence of traces of 1,1 dichloroethene, a volatile organic compound. This chemical was also found in the bedrock well of Demers. Contaminants recently showed up in some of the monitoring wells, such as MW-9, for the first time. These findings suggest that the zone of degradation may be larger than had been assumed by the Applicant and ANR. Without knowledge of the full magnitude and location of the landfill plume, and the long-term influence of the replacement well, the risk of contamination of the replacement well is uncertain.

66. The current Interim Certification requires the Applicant to complete construction of a new public water system by September 1, 1991.

67. The Public Water System Regulations require that backflow devices be installed when there is any cross-connection between a public water system or other water source with a contaminated source of water. The purpose of the backflow devices is to prevent contamination from entering the supply well from any of the individual water supplies. In order to be effective, backflow devices must be installed on all the private water supplies where there is a double connection with the public supply.

68. The Applicant believes that there are areas of its property where construction of a new water supply system that meets all regulations would be feasible. It has not, however, applied for a permit for a new public water system, and as of the close of the hearings in May, 1991,

it had not performed any tests to determine whether there is any location on its property on which a public water system can be developed.

E. Criteria 5 and 9(K) (traffic & public investment)

69. The landfill is located on Route 113 in Thetford approximately five and one-half miles from the intersection of Route 113 and Interstate 91. The majority of all landfill truck traffic will use this section of Route 113. The speed limit there is 40 mph with a 35 mph advisory speed limit for northbound traffic beginning about 550 feet south of the intersection of Route 113 and the landfill access road.

70. This section of Route 113 includes a steep and winding hill that descends from Thetford Hill into Thetford Center. The hill has four successive curves or reversals of direction.

71. A number of educational and children's recreational facilities are located along this section of Route 113. At the crest of Thetford Hill are an alternative elementary school, a day care center, and the public library. Just beyond the green is a public elementary school. A girl scout camp is located part way down the steep winding section of road between Thetford Hill and Thetford Center; groups of children often hike up and down the hill. Just at the foot of the hill is an access road to the Union Village Dam Recreation Area that is used for swimming, hiking, and picnicking. Just beyond Thetford Center toward the landfill is a ball field used by elementary-school aged children for baseball and soccer, with parking on the edge of the road. Bicyclists make extensive use of this section of Route 113.

72. Approximately 22 school buses each day regularly travel this section of Route 113 and there are a number of school bus stops along the road, one of which is located at the foot of the steep and winding hill that descends from Thetford Hill into Thetford Center. All school children must cross the road once each day to get to or leave the bus. There are school bus runs early in the morning, mid-day, and mid-afternoon.

73. The stretch of Route 113 between I-91 and the landfill contains two segments designated High Accident Locations by the Agency of Transportation (AOT) for the period

1984-88, and a third High Accident Location on Route 113 north of the landfill. One of these locations was also a High Accident Location for the period 1985-89.

74. According to a traffic count taken by the Applicant, an average of 57 trucks passed the landfill entrance between the hours of 6 a.m. and 6 p.m. on the weekdays during one week in January, 1990.

75. No specific information on the actual number of trucks or where they will be coming from was provided, but it was estimated that there could be as many as 40 to 50 heavy vehicles entering the landfill each weekday. The Applicant states that there will be an average of no more than 30 single- and double-axled trucks and eight trailers and tandem trailers per day.

76. The pertinent section of Route 113 is operating at Level of Service C, which is acceptable under the standards of the American Association of State Highway and Transportation Officials (AASHTO) for this type of road. The intersection of Route 113 and the landfill access road, and the intersection of Route 113 and Route 244, are Level of Service A. As many as 13 additional heavy trucks per hour could be added to Route 113 without affecting the Level of Service.

77. The sight distances at the intersection of Route 113 and the landfill access road are 645 feet to the north and 320 feet to the south. AASHTO's recommended corner sight distance recommendation for 40 mph is 760 feet; the AOT standard for corner sight distance is 440 feet at 40 mph and 385 feet at 35 mph. The Board finds that the corner sight distance is the appropriate standard to use for an intersection, rather than the stopping sight distance.

78. The intersection of Route 113 and the landfill access road fails to meet AOT's B-71 standard for commercial drives because the inside turning radius at the entrance is below the 42 to 50 foot radius required for large trucks and tractor trailers to turn; no evidence was provided that the distance between the straight portion of the entrance and the property line is at least 35 feet at a distance of 30 feet from the edge of the pavement; and no depressed ramp prior to the entrance to the highway exists to facilitate stopping before entering the highway and to facilitate proper drainage and reduce the likelihood of icing.

79. The Applicant provided a traffic matrix which is intended to minimize conflicts between landfill trucks and school buses by spacing the vehicles using the landfill throughout the day to have fewer trucks going to or leaving the landfill when school buses are running. (Exhibit #TT-3, Appendix C)

F. Criteria 7, 9(G), & 9(J) (municipal and utility services)

80. The Interim Certification requires the Applicant to develop and obtain approval for a new water supply to replace the existing alternate water supply. The water supply must be available to serve the specific properties identified in Condition 4 of the Interim Certification.

81. The Applicant has not performed testing to determine whether a water supply can be developed that will meet all applicable regulations and has not provided information concerning the financing and maintenance of a new water system. No legal agreement exists for formation of a water users' association or any other mechanism for the continued operation and management of the system.

82. The financial surety which the Applicant is required to provide to ANR to cover closure and post-closure costs may be insufficient to cover these costs. It is insufficient also to cover the costs of developing, constructing, and maintaining a new water supply.

G. Criterion 9(F) (energy conservation)

83. The Interim Certification requires the Applicant to encourage the municipalities served by the landfill to recycle, at a minimum, the following materials: glass containers, cardboard, newspaper, office paper, plastic containers, aluminum, and steel cans, and to provide at the landfill opportunities for individuals and commercial haulers to deposit yard wastes for the purpose of cornposting. The Interim Certification also requires the Applicant to submit to ANR a report detailing the efforts it will take to provide commercial waste haulers served by the facility with convenient and accessible opportunities to recycle the materials listed above, to offer programs to all users of the landfill to recycle materials and compost yard waste, and to minimize the quantity of unregulated hazardous materials disposed of

at the landfill. Implementation of the activities in the report is required to be implemented within 30 days of ANR's approval.

H. Criterion 10 (local & regional plans)

84. The Thetford Town Plan, adopted in 1987, contains the following pertinent statements concerning protection of the Town's natural resources:

> Thetford's Town Plan is based upon the premise that Thetford's natural resources should be preserved and that the future development of the Town should be directed and limited by the ability of the land to support that development. Thetford's natural resources include its forests, open lands, surface and groundwater, wildlife and soils. They present both opportunities for and constraints to development and must be conserved or used with care so as not to preclude their continued use. (VIII -Introduction)

85. The Town Plan recommends that the Town should "[r]eview applications for industrial and commercial uses with careful attention to the environmental impacts," and "[d]o not permit industrial and commercial uses with wastes which may contaminate surface water, groundwater or soils, or may result in air pollution." (111-20)

86. The Town Plan seeks to protect drinking water in village areas specifically in its recommendation that "[t]he town should also adopt regulations to restrict activities which present contamination risks to the water in the APAs [aquifer protection areas] and other areas of dense settlement where residents rely on private wells." (VII-12) An example of a protective measure that the Town recommends be taken is "[p]rohibit commercial and industrial activities which use or store hazardous materials (e.g., junkyards, auto service and repair, landfill)." (VII-13)

87. The Village Residential District is described as follows:

> This district was created to encourage the development of residential centers on land suitable for building development which will serve as a nucleus for future residential

> growth of the Town. . .. In order to reinforce the residential character of this district residential uses, home occupations and churches are the only permitted uses. Conditional uses include civic and institutional uses, apartments and business use, limited to convenience type retail shops, personal services shops, professional offices, accessory to a residence and restaurant. Thetford's existing village districts include areas of Thetford Hill, Thetford Center, Post Mills, North Thetford, and Union Village.

88. A survey by the Planning Commission "to gather their opinions about the Town" was done in July 1981. Concerning "town character," "[u]ncrowded living conditions and lack of pollution were most frequently selected by respondents as reasons why they felt Thetford is an attractive place to live." (VIII-9)

89. One of the goals of the Plan is "[t]o prevent development which jeopardizes the natural areas, health, safety or prosperity of the Town, or necessitates an excessive expenditure of public funds for supply of municipal services.;; (11-9)

90. As a way of preserving the character of the village areas, the Town recommends to "[r]estrict most of the highway-oriented and traffic-generating industrial and commercial growth to East Thetford." (111-20)

91. With regard to the landfill, the Plan, which was adopted in 1987, states the following:

> Thetford's solid waste is disposed of at the privately owned Barker/Sargent landfill in Post Mills. The landfill has a limited life-time and will probably not be certified beyond 1991. The Town should continue to participate in the Upper Valley Solid Waste Management District to develop a long-term solution to solid waste disposal.

92. With respect to solid waste disposal in the region, the Regional Plan states:

> Certified landfill space is a valuable resource requiring careful management.

> Source reduction, mandatory recycling, composting of yard and food waste, and other methods of diverting waste materials from landfills needs to be undertaken. The existing landfills at Lebanon, Hartford and Post Mills have a finite life which must be extended as much as possible.

Upper Valley-Lake Sunapee Council Regional Plan, Volume 2, at 22.

93. One of the goals of the regional plan for disposal of solid waste is to "[e]ncourage solid waste disposal solutions which are environmentally sound, meet the highest standards for environmental quality and utilize the best proven technologies to protect the environment." Id., Volume 1, at 111-34.

94. The Regional Plan incorporates recommendations of the 1986 Regional Solid Waste Plan for the Upper Valley Solid Waste District. These include the following:

> 1. The District endorses the continued operation and expansion of the Lebanon and Hartford landfills and the decisions of Grafton and Charlestown to trasfer [sic] waste out of the District.
>
> . . .
>
> 3. The towns of Thetford, Lyme and Norwich should make arrangements to have waste hauled to the Lebanon or Hartford landfills.
>
> 4. The towns of Lyme, Thetford and Unity should plan for the development of transfer stations at convenient locations in each town.

Id., Volume 1, at 111-29.

95. The Regional Plan acknowledges the importance of protecting water resources "to insure continued potability of groundwater and continued use of surface waters by people and wildlife." Id. at 1X-5. The following policies are recommended:

> Water quality in lakes, ponds, rivers, streams, brooks and other public use sources must be maintained at the highest standards for recreational purposes (and habitat) including swimming, fishing and hunting. ... Development which could threaten the quality of recreational waters should be discouraged and alternatives sought.

Id., Volume 2, at 49.

Two regional goals identified in the Plan are: "To promote the protection and improvement if possible, of the quality of our water resources; [and] To maintain a water supply at a high quality to adequately serve existing and anticipated residential, business, recreational and wildlife needs." Id., Volume 1, at IX-17. To achieve these goals, the Plan calls for the Upper Valley-Lake Sunapee Council to do the following:

> Work to create protective areas around water bodies and along water course; ... advise and assist communities in protecting from encroachment and incompatible development all identifiable aquifer areas; ... promote environmentally sound methods of solid waste and septic disposal; ... support the protection of existing and potential water supply sources ....

Id. at 1X-17-18.

V. CONCLUSIONS OF LAW

A. Water Pollution - Criteria 1, 1(B)

10 V.S.A. § 6086(a)(l) states that before granting a permit, the Board shall find that the development:

> [w]ill not result in undue water or air pollution. In making this determination it shall at least consider: the elevation of land above sea level; ... . the slope of the land and its effect on effluents; the availability of streams for disposal

of effluents; and the applicable health and environmental conservation department regulations.

10 V.S.A. § 6086(a)(l)(B) states:

Waste disposal. A permit will be granted whenever it is demonstrated by the applicant that ... the development or subdivision will meet any applicable health and environmental conservation department regulations regarding the disposal of wastes, and will not involve the injection of waste materials or any harmful or toxic substances into ground water or wells.

1. Undue

The question that the Board must answer is whether the operation of the landfill since expiration of the landfill's Act 250 permit in 1986 and the reopening of the landfill will cause undue water pollution. There does not appear to be any dispute that the landfill has created, and will continue to create, water pollution. The real disagreement among the parties concerns whether the pollution is "undue."

The word "undue" is not defined in Act 250. Webster's New Collegiate Dictionary defines "undue," in pertinent part, as "2. Inappropriate; unsuitable. 3. Not right; not lawful or legal. 4. Not agreeable to a standard; excessive; immoderate; inordinate."

A review of decisions addressing the term "undue water pollution" in the context of Act 250 indicates that it has been interpreted in the context of the specific facts of each case under consideration; the decisions are more instructive about what is **not** undue rather than what is.

In In re Zonina Permit of Patch, 140 Vt. 158 (1981), the Vermont Supreme Court rejected the argument that a permit for a landfill should not be granted where it had been found that there was a "minimal possibility that pollution of wells might happen," stating that such an interpretation of "undue" "would virtually preclude any landfills in the state, since contamination of groundwater is always a possibility." Id. at 168-69.

The Board stated in two prior decisions, Re: Howard and Louise Leach, #6F0316-EB, Findings of Fact, Conclusions of Law and Order (June 11, 1986) and Re: Sherman Hollow, Inc., #4C0422-5-EB (Revised), Findings of Fact, Conclusions of Law and Order (Feb. 17, 1989), that discharge of leachate or other substances to groundwater does not necessarily result in undue water pollution. In Leach, the Board considered the potential of the leachate from a proposed landfill to contaminate groundwater and concluded that there would be no undue water pollution because the risk of contamination was very low. Id. at 24-25. In Sherman Hollow, the Board stated that "it is not reasonable to require the Applicants to prove that there is absolutely no risk that any amount of pesticides used on the golf course will not enter groundwater or wells," but denied a permit because it had insufficient information to make an affirmative finding on Criterion 1. Id. at 10.

Parties have urged the Board to adopt various theories of what constitutes "undue water pollution."

Several parties argue that water pollution is undue when it violates applicable drinking water standards and, in support of that proposition, cite the Board's decision in Re: Hawk Mountain Corporation, #3W0347-EB, Findings of Fact, Conclusions of Law and Order (Aug. 21, 1985), where two members of the Board concluded that violation of a specific prohibition in the State Water Quality Standards was, per se, "undue water pollution.'* Id. at 20.

Other arguments have been made that pollution is undue when contamination can be avoided or significantly reduced, and is also undue when pollution spreads beyond the boundaries of a project and creates harm to individuals.

The Applicant argues that "undue" is a relative term that can be determined only by considering the public benefit and by comparing this landfill to other landfills in the state.

The Thetford Board of Selectmen believes that public benefit and public costs must be weighed in determining whether an activity creates undue pollution.

We expressly reject the argument that "undue" is a relative term, to be defined only in relation to other landfills or by weighing the public benefits against the risks. We are not willing to read such a significant concept into a statute where the legislature did not make it explicit. That is particularly important in light of the fact that although the weighing of public benefits in Act 250 is

explicitly required under Criterion 8(A) (necessary wildlife habitat), no such requirement is contained in Criterion 1. Further, a comparison of landfills in the state or the weighing of public benefits against risks would require substantially more information and additional hearings; the additional time that would be required for a decision would be unacceptable to the public and to the Board members alike.

The Board agrees that the possibility that some leachate may reach groundwater does not constitute undue water pollution. In this case, however, there is no dispute that the landfill has already caused serious pollution of the groundwater. Substantial evidence demonstrates that leachate from the landfill has contaminated the water supplies of residents living near the landfill and that both State and federal standards for drinking water have been exceeded; the water is clearly not safe to drink. Moreover, the contamination appears to be increasing; without knowing the direction of travel of the leachate plume, the possibility exists that additional water supplies may become contaminated over time.

The Board believes that the pollution that has resulted from the operation of this landfill is undue because it has contaminated drinking water supplies. Pollution of groundwater may not always be undue, but where, as in this case, water supplies are drawn from groundwater that has become contaminated, then that pollution is undue.[2]

Based upon the substantial evidence of contamination of groundwater and private water supplies, and the increasing levels of contamination found in the monitoring wells, the Board concludes that the landfill has created undue water pollution since 1986 and will continue to create undue water pollution.

2. Compliance with applicable regulations

The Board concludes that the landfill does not meet applicable Department of Environmental Conservation (DEC) regulations, specifically the Water Quality Standards (WQS) and the Ground Water Protection Rule and Strategy (GWPR).

[2]Undue water pollution may also result where water supplies are not contaminated, depending upon other factors which exist in a given situation.

Discharge Permit

In Re: Hawk Mountain Corporation and Our World Sewer Association, Inc., #3W0347-EB, Findings of Fact, Conclusions of Law and Order (Aug. 21, 1985), the Environmental Board ruled that it is required by Criterion l(B) to determine which regulations are pertinent with respect to a project and "to evaluate conformance with the requirements of health and water resources [now environmental conservation] department regulations, even though those agencies may have previously concluded that a project conforms with said regulations. ... This legislative scheme contemplates an independent analysis and application of other agencies' regulations by this Board . . . ." Id. at 16. In the Hawk Mountain decision, the Board determined that notwithstanding the DEC's practice not to require a discharge permit for projects which secured other permits regulating discharges of sewage, the evidence that the on-site septic systems under review would discharge waste into the groundwater that would eventually reach the river in "detectable amounts," although highly diluted, compelled the Board to conclude that an indirect discharge would occur and that a discharge permit was therefore required under 10 V.S.A. § 1259(a). That section requires a permit before discharging any wastes into waters of the state.[3] The Board ruled that the project did not meet Criterion l(B) because the provision in the WQS that prohibits the discharge of domestic waste into Class B waters was violated. The Board's decision was upheld by the Vermont Supreme Court. In re Hawk Mountain, 149 Vt. 179 (1988).

Monitoring of the Ompompanoosuc River shows that leachate from the landfill is discharging into the river by means of groundwater. This is a discharge within the meaning of Chapter 47. Therefore a discharge permit is required.

ANR argues that a discharge permit is not required for indirect discharges unless they are "new or increased," citing 10 V.S.A. § 1259(e).

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[3] "Waste" is defined as "effluent, sewage or any substance or material, liquid, gaseous, solid or radioactive, including heated liquids, whether or not harmful or deleterious to waters." 10 V.S.A. § 1251(12). "Discharge" is defined as "the placing, depositing or emission of any wastes, directly or indirectly, into an injection well or into the waters of the state." 10 V.S.A. § 1251(3). "Indirect discharge" means "any discharge to groundwater, whether subsurface, land-based or otherwise." 10 V.S.A. § 1251(15).

The Board believes that this sentence must be read in the context of the entire statutory scheme of Chapter 47, which essentially prohibits all discharges to waters of the state except indirect discharges of sewage from on-site septic systems of less than 6,500 gpd. The exemption for small septic systems was added in 1986 after the Environmental Board and the Water Resources Board ruled that an indirect discharge constitutes a discharge within the meaning of Chapter 47 and therefore requires a discharge permit. Since the indirect discharge of leachate from the UVRL does not fall within this exemption, a discharge permit is required. The meaning attributed to § 1259(e) by ANR would allow, by implication, the indirect discharge of any wastes other than sewage that existed as of May 1986 without a discharge permit or, potentially, any permit at all. Indirect discharges of wastes that were occurring but were not detected as of May 1986 could be exempted from any permit requirement. The legislature did provide a specific exemption for certain other indirect discharges: § 1259(f) exempts accepted agricultural or silvicultural practices, stormwater runoff, and nonpolluting wastes from the prohibitions against indirect discharges into waters of the state. The Board concludes that because § 1259(a) prohibits all discharges except those specifically exempted, the discharge of leachate into the Ompompanoosuc River requires a discharge permit.

ANR also argues that a discharge permit is not required because the Indirect Discharge Rules (IDR), which establish procedures for the review of sewage disposal systems, state that an indirect discharge permit is not required for "existing discharges of non-sewage waste." IDR § 14-201. However, jurisdiction cannot be conferred or eliminated by agency rule; the authority of administrative agencies is restricted to specific grants of jurisdiction from the legislature.[4] In re Agency of Administration, 141 Vt. 68, 76 (1982). Moreover, the landfill's discharge is not an "existing discharge' as defined in the WQS, which states: "Existing discharge means any discharge to the extent authorized by a valid permit issued under the provisions of 10 V.S.A. § 1263 or § 1265 as of January 7, 1985." WQS at § 1-01(B)(12). A "new discharge" is defined as "any discharge not authorized under the provisions of 10 V.S.A. § 1263 as of

[4]The IDR also state that indirect non-sewage discharges of waste must meet the WQS. In fact, the WQS have no independent regulatory effect but must be met only if a discharge permit is required.

January 7, 1985 or any increased pollutant loading or demand on the assimilative capacity of the receiving waters from an existing discharge that requires the issuance of a new or amended permit." WQS at § 1-101(B)(20). Because WRL has never had a permit under either of the cited sections as of January 7, 1985, its discharge must be treated as "new" and not "existing," and thus is not exempt from the requirements for a discharge permit.

A discharge permit is also required for the indirect discharge from the landfill because of the increased discharge of leachate caused by the landfill since 1986. While a direct cause and effect relationship between the expansion of the landfill in 1988 and the increased contamination of groundwater has not been established, a reasonable inference can be drawn from the evidence that there is a relationship between more trash and increased leachate over time.

Water Quality Standards

Having concluded that a discharge permit is required, the Board concludes that the WQS are applicable DEC regulations within the meaning of Criterion l(B). See Hawk Mountain, 149 Vt. at 184-85. The Board also concludes that the landfill does not comply with the WQS.

The WQS contain a number of requirements that must be met in order to discharge wastes into waters of the state. Among these are the requirement that nine criteria must be satisfied prior to the new discharge of wastes. WQS at § 1-104(A). These include the following:

2. There is no alternative method of, or location for, waste disposal that would have a lesser impact on water quality including the quality of groundwater, or if there is such an alternative method or location, it would be clearly unreasonable to require its use.

3. The design and operation of any waste treatment or disposal facility is adequate and sufficiently reliable to protect all beneficial values and uses and to insure compliance with these rules and with all applicable state and federal treatment requirements and effluent limitations.

5. Except as provided for in 10 V.S.A. § 1259(d),(e) and (f) [concerning small sewage disposal systems], the discharge of wastes that, prior to treatment, contained organisms pathogenic to human beings into Class A or Class B waters is prohibited.

The Board takes official notice that the applicable section of the Ompompanoosuc River is classified as Class B waters. See Vermont Water Resources Board Classification Order for the Ompompanoosuc River (Dec. 28, 1977). Section 3-03(A)(2) of the WQS requires that Class B waters be managed to achieve and maintain "a high level of quality" that is compatible with, among other things, "[p]ublic water supply with filtration and disinfection; irrigation and other agricultural uses; swimming, and recreation."

Evidence in the record demonstrates that contaminants from the landfill are reaching the river. As stated in many of the Findings of Fact, above, insufficient information was provided for the Board to be able to make any conclusive statements concerning the future effect on the river from the landfill leachate. The Applicant has the burden to demonstrate compliance with Criterion l(B). In the absence of evidence demonstrating compliance with the WQS, the Board must conclude that the application fails to satisfy Criterion l(B).

Ground Water Protection Rule and Stratesv

The Ground Water Protection Rule and Strategy (GWPR) is another DEC's regulation that is applicable to the Board's review under Criterion l(B). It was promulgated pursuant to the Vermont Ground Water Protection Act, 10 V.S.A., Chapter 48. Section 1392 of the Act directs the Secretary of ANR to, among other things, develop a strategy for the management and protection of the state's groundwater resources and to classify groundwater resources and adopt "technical criteria and standards for the management of activities that may pose a risk to their beneficial uses" and to adopt the groundwater management strategy and technical criteria and standards in a rule. The statute also identifies classes of groundwater and directs the Secretary to classify the state's groundwater resources in accordance with the identified classes. Section 1394 states that all groundwater is classified as Class III water unless reclassified by the Secretary. No groundwater has yet been reclassified.

As with the WQS, the GWPR has no independent regulatory authority but provides standards for groundwater in existing ANR permit programs. 10 V.S.A. § 1392(a)(7). Section 12-103 of the GWPR states:

> This rule provides restrictions, prohibitions, standards, and criteria for ground water protection which will be adopted, as appropriate, in Agency permit programs which regulate activities which may affect ground water. The Secretary shall amend all appropriate rules to conform to 10 V.S.A., Chapter 48 and this rule. These control measures and criteria may be adopted by other state agencies or local governments with authority to manage activities affecting ground water.

Section 12-701(1) states:

> The standards and criteria in this Subchapter apply to all regulatory programs administered by the Secretary which may affect ground water resources. The rules governing activities managed by these programs shall be revised to incorporate these standards and criteria as appropriate.

The Solid Waste Management Rules (SWMR) have incorporated the GWPR. Section 6-303(c) of the SWMR states: "The Secretary may not certify a discrete disposal facility unless it is in compliance with rules promulgated by the Secretary pursuant to 10 V.S.A., Chapter 48 ...."

In a previous decision concerning a landfill, the Board ruled that "the Groundwater Protection Act is relevant to our Criterion 1 review of the project . .. and any protective standards and regulations adopted by the Secretary must be considered 'applicable water resources department regulations' and must be evaluated under Criterion 1(B)." Re: Howard and Louise Leach, #6F0316-EB, Findings of Fact, Conclusions of Law, and Order at 6 (June 6, 1986). Accordingly, the Board rules that the landfill must meet the GWPR.

As described in Findings of Fact 29, above, exceedances of the enforcement standards of the GWPR have been detected in the monitoring wells.

The GWPR prohibits "any new activity which creates or allows discharges to the ground water of any hazardous or radioactive waste ...." GWPR § 12-503(3)(a)(ii). Section 12-710(2)(a) addresses exemptions for Class III and IV ground waters and states:

> The Secretary may not approve a proposed activity at a location where a preventive action limit or enforcement standard has been exceeded within Class III or IV ground waters unless and exemption has been granted under this section.

No evidence was submitted to the Board that an exemption from ground water quality standards has been granted. The Board therefore concludes that the GWPR has not been met.

The GWPR is also not met because none of the responses required to be taken when a ground water standard has been exceeded has been taken. Section 12-710(2)(b) states:

> A response is required under §12-708 or §12-709 when a preventive action limit or an enforcement standard has been exceeded unless an exemption has been granted under this section.

Section 12-709 describes the responses that must be made when the concentration of a substance in groundwater exceeds an enforcement standard, and states in subsection (2) that "the Secretary shall require responses as necessary to achieve compliance with the enforcement standards ...." The section includes a list of the range of responses which the Secretary may take, as follows:

(a) Require' a revision of the operational procedures at an activity.

(b) Require a change in the design or construction of the activity.

(c) Require an alternate method of waste treatment or disposal.

(d) Require prohbition or closure and abandonment of an activity.

(e) Require remedial action to renovate or restore ground water quality.

(f) Revise rules or criteria on activity design, location, or management practices.

Based upon the evidence in the record, the Board concludes that ANR has not made any of the responses cited above.

For the reasons explained above, the Board concludes that, the GWPR has not been met and that Criterion l(B) is therefore not satisfied.

The Board is aware that its conclusions that a discharge permit is required for the indirect discharge of waste from the landfill and that the GWPR is not met by the landfill contradict the practices of the DEC. We believe, however, that administrative practice must be based upon legislative mandate, and that if existing laws conflict or are impossible to meet, the legislature should be so informed so that corrections can be made by the appropriate branch of government. In this instance we hope that the legislature does take action to clarify the applicability of various statutes to landfills.

B. Shorelines - Criterion 1(F)

10 V.S.A. § 6086(a)(l)(F) provides that if a project is located on a shoreline, the applicant must demonstrate that the project:

> must of necessity be located on a shoreline in order to fulfill the purpose of the [project], and the [project] will, insofar as possible and reasonable in light of its purpose:
>
> (i) retain the shoreline and the waters in their natural condition,
>
> (ii) allow continued access to the waters and the recreational opportunities provided by the waters,
>
> (iii) retain or provide vegetation which will screen the development or subdivision from the waters, and
>
> (iv) stabilize the bank from erosion, as necessary, with vegetation cover.

The question of whether the landfill must of necessity be located on a shoreline in order to fulfill its purpose is a difficult one in light of the fact that the landfill operated under an Act 250 permit until 1986 and thus already exists. The question of whether a project must "of necessity" be located on a shoreline contemplates an application for a new project, not a project that is already located on a shoreline. The siting of this landfill was approved by Act 250 in 1971. Thus, the Board believes that the question of necessity is not applicable to this project.

The subcriteria of Criterion l(F) can, however, be addressed. Subcriteria (ii) and (iii) are met. Adequate screening of the landfill from the river could be provided with the existing vegetation and supplemental plantings and continued access to the waters would be allowed.

The Board believes that insufficient information was provided to conclude that the shoreline and the water will be retained in their natural condition, as required by subcriterion (i) or that the bank will be stabilized from erosion, as necessary, with vegetation cover, as required by subcriterion (iv), "insofar as possible and reasonable in light of its purpose." The existence of iron and manganese in the amounts detected at the surface water monitoring locations demonstrates that leachate is reaching the river in some amount and with some level of contaminants. Insufficient data was presented to conclude that the contaminants reaching the river by way of the groundwater will not increase. Thus it is not known whether it is possible to operate the landfill without changing the natural condition of the stream. Moreover, UVRL asserts in its motion to alter that its closure plan includes the removal of soil from the area between the existing landfill footprint and the Ompompanoosuc River or the Lake Fairlee Outlet Stream, but no details were provided concerning the protection of the shoreline or the streambank during the soil removal. Accordingly, the Board must conclude that UVRL has not demonstrated compliance with subcriteria (i) and (iv) of Criterion l(F).

C. <u>Water Supplies - Criteria 2 & 3</u>

10 V.S.A. § 6086(a)(2) states that a project must "have sufficient water available for the reasonably foreseeable needs of the subdivision or development." 10 V.S.A. § 6086(a)(3) states that a project must not "cause an unreasonable burden on an existing water supply, if one is to be utilized."

The Applicant developed a water supply system to provide potable water to the residents whose water supplies were contaminated by the landfill in the 1980s. Now the available evidence indicates a likely hydraulic connection between the landfill and the replacement water supply. Traces of 1,1 dichloroethene, a volatile organic compound, were found in the replacement water system during the summer of 1990. The possibility exists that the replacement water supply will become more contaminated; without knowledge of the full extent and magnitude of the landfill plume in the bedrock, the Board must assume that the replacement well will become too contaminated for public use. This is clearly an unreasonable burden on existing water supplies.

The Applicant stated that it intends to develop another water supply for those people whose water supplies have become contaminated by the landfill or who are currently using the alternate water supply that is in danger of becoming contaminated. Because the new water supply will have to be designed to serve more than 10 households and more than 25 persons, it will be a public water supply subject to the regulations governing public water supplies and an appropriate permit must be obtained.[5]

However, UVRL has not done the testing required to identify a suitable location for a new water supply system nor has it applied for a permit from the Water Supply Division of ANR. Thus it is not known whether the development of a new uncontaminated water supply is even possible within the limits of the Applicant's property. In addition, no mechanism has been developed to assure the continued operation and maintenance of the water system once it is developed. Until such time as UVRL's intentions become reality with respect to the new water supply, the Board cannot find that Criteria 2 and 3 are satisfied.

In order to satisfy Criteria 2 and 3, the Applicant would have to develop and construct a water system with the capacity to serve at least all properties whose water has or could become contaminated by the landfill and the Applicant would

[5]House bill 419 recently transferred jurisdiction over public water supplies from the Vermont Department of Health to the Water Supply Division, Department of Environmental Conservation, Agency of Natural Resources. Since the existing water system currently serves 27 people, it falls within the definition of a public water supply and should obtain a permit from the Water Supply Division to continue operating.

have to establish a trust to provide funds for the continued operation and maintenance of a public water system. The trust documents, along with a mechanism for long-term operation and maintenance of the system, would have to be submitted to and approved by the Board prior to issuance of a permit.

D. Air and noise pollution and aesthetics - Criteria 1 & 8

The Board considers noise under Criterion 1 as the potential for physical harm and under Criterion 8 as the potential aesthetic effect of noise. Re: John and Joyce Belter, #4C0643-6R-EB, Findings of Fact, Conclusions of Law and Order (May 28, 1991). There was no evidence of any physical harm caused by noise from operation of the landfill.

The noise created by the commercial trash trucks driving to and from the landfill can be very disruptive to persons living along Route 113, especially in the early morning when people are sleeping. The Landfill Operation Agreement establishes rules for commercial haulers to reduce truck noise. If it were issuing a permit, the Board would incorporate those rules into a permit condition and the Applicant would be held responsible for compliance with the rules. In addition, the hours for use of the landfill by commercial haulers would be limited so that operations may not begin until 6:00 a.m. on weekdays and 8:00 a.m. on weekends, and that the landfill would be closed to commercial haulers after 4:00 p.m. on weekdays and 12:00 noon on Saturdays.

In order to prevent litter, a permit condition would require that access to the landfill be prohibited to any vehicle which is not covered in a manner sufficient to prevent blowing debris. In addition, a permit condition would require that six inches of cover material must be put over the waste in the landfill and compacted at the end of each day of operation, and any exposed areas of the site which are not in active use would have to be immediately seeded and mulched.

In order to improve the appearance of the landfill entrance and reduce the dust, if the Board were issuing a permit, the Applicant would be required to pave the entrance of the access road to the landfill, and to grade, seed, and landscape the entrance area of the landfill subsequent to closing.

The Board concludes that based upon compliance with the conditions referred to above, the project would satisfy Criteria 1 and 8 (air and noise).

E. Traffic congestion and safety - Criteria 5 & 9(K)

Route 113 between I-91 and the landfill passes through areas of intensive residential and recreational use. Several schools, a children's camp, and a recreation area are just a few of the educational and recreational facilities located along this section of Route 113. This *section* of Route 113 includes a steep and winding hill that descends from Thetford Hill into Thetford Center. Approximately 22 school buses each day regularly travel this section of Route 113 and there are a number of school bus stops along the road. Two segments of the road have been designated High Accident Locations by the AOT in the past because of the high number of accidents. Up to 50 heavy vehicles will be driving on this section of Route 113 and entering the landfill each weekday.

The Board is concerned about the unsafe traffic conditions that could result from the large amount of heavy truck traffic on Route 113, particularly in the villages. The traffic matrix provided by the Applicant is intended to minimize conflicts between landfill trucks and school buses by spacing the vehicles using the landfill throughout the day to have fewer trucks going to or leaving the landfill when the school buses are running. Although this may alleviate truck/school bus type of conflict, it does not alleviate the concern about conflicts between trucks and people on or near the road, including children. The Board believes that further measures would have to be taken by the Applicant to ensure that the trucks using the landfill travel no more than 25 mph in the village areas and in the vicinity of the landfill and that a mechanism for enforcing the speed limit would have to be applied.

Sight distances to the south at the intersection of Route 113 and the landfill entrance are insufficient. The landfill entrance fails to comply with the AOT's B-71 standard for commercial driveways. The Board cannot deny a permit for lack of compliance with Criterion 5, but may impose conditions to relieve burdens created. 10 V.S.A. § 6087. The Board would therefore require that, prior to issuance of a permit, the Applicant submit a plan for taking whatever measures are necessary to comply with AOT's B-71 standards for commercial driveways, including achieving the corner sight distances (440 feet at a speed limit of 40 mph). The Board would then reconvene the hearing if requested by any party to review the plan.

Criterion 9(k) requires the Applicant to demonstrate that the landfill will not unnecessarily or unreasonably endanger the public investment in any adjacent public facilities, services, or lands, including highways, and will not materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to any public facilities, service, or lands, pursuant to Criterion 9(K). 10 V.S.A. § 6086(a)(9)(K).

In Re: Swain Development Corp., #3W0445-2-EB, Findings of Fact, Conclusions of Law, and Order (Aug. 10, 1990), the Board stated that Criterion 9(K) calls for two separate inquiries concerning public facilities:

> First, the Board is to examine whether a proposed project will unreasonably or unnecessarily endanger the public investment in such facilities. Second, the Board is to examine whether a proposed project will materially jeopardize or interfere with (a) the function, efficiency, or safety of such facilities, or (b) the public's use or enjoyment of or access to such facilities.

Id. at 33.

With respect to the second inquiry under Criterion 9(K), the Board interprets this inquiry to be different from that under.Criterion 5 concerning unsafe traffic conditions. Under Criterion 5, the Board looks to see whether a proposed project will create traffic conditions which are unsafe or traffic congestion which is unreasonable. The Board may not deny a project simply because such conditions are present. In contrast, under Criterion 9(K), the Board examines whether a proposed project will materially jeopardize or interfere with a public facility's function, safety, or efficiency or the public's use or enjoyment of or access to such facilities. Because public facilities include public highways, traffic conditions on those highways may be examined under Criterion 9(K), and if material jeopardy or interference will be created, the proposed project may be denied. Thus, the inquiry into traffic safety under Criterion 9(K), involves a higher threshold than Criterion 5.

The Board's review of Criterion 9(K) in this matter was limited to the effect on adjacent public highways. Route 113 is adjacent to the proposed project.

The Board believes that a speed limit of 25 mph in the village areas and the vicinity of the landfill would alleviate its concern about traffic safety, if the speed limit were enforced. However, there is no proposal before the Board concerning enforcement of that speed limit. Therefore, the Board must find that the safety of Route 113 is materially jeopardized and that the public's use of Route 113 is also materially jeopardized.

F. **Municipal and utility services - Criteria 7, 9(G) & 9(J)**

Criterion 7 requires the Applicant to demonstrate that the project "will not place an unreasonable burden on the ability of the local governments to provide municipal or governmental services."

Criterion 9(G) requires that any "privately-owned utility services or facilities are in conformity with a capital program or plan of the municipality involved, or adequate surety is provided to the municipality and conditioned to protect the municipality in the event that the municipality is required to assume the responsibility for the services or facilities."

Criterion 9(J) requires that "necessary supportive governmental and public utility facilities and services are available or will be available when the development is completed under a duly adopted capital program or plan, an excessive or uneconomic demand will not be placed on such facilities and services, and the provision of such facilities and services has been planned on the basis of a projection of reasonable population increase and economic growth."

Opponents to the landfill contend that these criteria are not met because it is likely that the existing replacement water supply could become contaminated and, without another water system in place or any guarantee that one could be developed, the Town could become responsible for the system if a public health risk or hazard should occur. The argument is also made that the Town does not have the funds to hire sufficient personnel to ensure that the speed limits within the Town are enforced.

With regard to the concern about the water system, as described above the Board agrees that because of the absence of any assurance based upon site investigation and testing that a new uncontaminated public water system can be developed, operated, and maintained in accordance with State

and federal law, and the lack of any mechanism for ensuring the long-term operation and maintenance of the system, the possibility exists that the Town would be required to provide water to those people whose water supplies have or will become contaminated from the landfill. This could result in a substantial financial burden on the Town, and no financial surety has been provided to the Town to protect the Town in the event it must assume the responsibility for providing potable water to some of its residents. In addition, it is not clear at this time that sufficient funds are available to ensure proper closure of the landfill with revised final contours as ANR claims will be necessary. Inadequate or improper closure of the landfill could also result in a financial burden on the Town. The Board therefore concludes that the project does not comply with Criteria 7, 9(G), and 9 (J).

G. Energy conservation - Criterion 9(F)

Criterion 9(F) requires that "the planning and design of the subdivision or development reflect the principles of energy conservation and incorporate the best available technology for efficient use or recovery of energy."

The Interim Certification requires the Applicant to encourage municipalities served by the landfill to recycle certain materials and to provide users of the landfill opportunities to recycle at the landfill. In order to take advantage of the opportunity to have sorted material which is picked up by the haulers recycled, the Board will require that the Applicant provide, at the landfill, appropriate containers for disposal of recyclable materials and that the Applicant be responsible for recycling all recyclable materials deposited in the containers and for properly disposing of everything else.

H. Town and regional plans - Criterion 10

Criterion 10 requires a project to conform with any duly adopted local or regional plan.

Town Plan

The Thetford Town Plan contains strong language encouraging the preservation of the Town's natural resources, with emphasis on protecting drinking water. The Plan specifically recommends that the Town should adopt regulations to restrict activities which present contamination risks to water in village areas where residents rely on private wells.

The Town Plan also clearly recommends the preservation of the "residential character" of the village districts and does not include landfills as one of the permitted uses. "Highway-oriented and traffic-generating industrial and commercial growth" is discouraged. The expectation expressed in the Plan concerning the landfill is that it would probably close by 1991 because of its "limited lifetime."

Without the assurance that the public's water supplies are either safe in the long-term or replaced with a new system of potable water, the Board must conclude that the continued operation of the landfill violates the provisions in the Town Plan that call for preservation of natural resources and protection of drinking water.

Resional Plan

The Upper Valley-Lake Sunapee Regional Plan encourages the continued operation and expansion of the Lebanon and Hartford landfills and for the Town of Thetford to develop transfer stations at convenient locations. The Plan recognizes that existing landfills in Lebanon, Hartford, and Post Mills have finite capacity and that "source reduction, mandatory recycling, cornposting of yard and food waste and other methods of diverting waste materials from landfills need to be undertaken" in order to extend the lives of the landfills.

The Board concludes that the continued operation of the landfill does not comply with the Regional Plan. The only plan for diverting waste from the landfill that could be recycled or composted is the requirement in the Interim Certification that the Applicant must encourage the municipalities served by the landfill to recycle certain materials and must provide "opportunities for individuals and commercial haulers to deposit yard wastes for the purpose of composting" at the landfill. Recycling is not mandatory, and no proposal for encouraging or requiring source reduction was submitted.

In addition, the Plan encourages the protection of water quality and discourages development which threatens the quality of recreational waters. The operation of the landfill has degraded and will continue to degrade water quality. If the measures called for in the Plan for prolonging the life of the landfill were being implemented, the Board might conclude that the continued operation of the landfill for a limited time complies with the Plan notwithstanding the language in the Plan encouraging protection of water quality. As stated

above, however, these measures are not being taken and, accordingly, the Board concludes that the landfill operation does not comply with the Regional Plan.

I. Conclusion

Because of the enormous amount of time and other resources consumed by this case, the Board feels compelled to offer some comments. We believe that the eight months and eleven evidentiary hearings were not all necessary and were due in great part to the serious deficiencies in the Applicant's organization and presentation of this case to the Board, and to the considerable redundant and irrelevant testimony from the Applicant and some of the parties. The Applicant provided no comprehensive report that contained the basic information necessary for an understanding of this case. As a consequence, trying to understand the landfill's topography, drainage, and geology, and the effects of the landfill on both surface and groundwater quality, has been unnecessarily difficult for the Board and the other parties; it could only be done by fitting together bits and pieces of information from numerous sources. The hearing began without a comprehensive map showing the landfill site and all relevant features of the area. Much of the information provided by both the Applicant and ANR was done so only after request and pressure by other parties and the Board. Information that should have been included in the initial case presentation continued to trickle in over the course of the eight months of evidentiary hearings. For example, information on traffic safety issues that should have been provided with the prefiled testimony prior to the first hearing was not provided until more than six months later.

The presentation of new information throughout this process was also due in part to the discovery of new information about the landfill during the eight months of hearings by the Applicant and ANR. A great deal of this information could have been discovered much earlier had a comprehensive monitoring program, including the installation of wells in sufficient number and appropriate locations, been instituted when movement of leachate off-site was first suspected. The lack of information concerning such critical factors as the influence of fractures in bedrock, the existence of a groundwater mound, the vertical gradients, the elevation of the water table beneath the landfill, and the location of a groundwater divide undermines any conclusions about the direction of groundwater flow and, consequently, the location or extent of the zone of degradation from contaminated groundwater. It is thus difficult to have

confidence in the conclusions of the Applicant and ANR that the groundwater flows through bedrock in a predominantly westerly direction. Given **the seriousness of the contamination of the environment and of the resulting health** risk to the people living in the vicinity of the landfill, the Board is deeply troubled by the willingness of the Applicant and the ANR to offer final conclusions relating to the public health and safety where the data provided contain such significant gaps and inadequacies.

The Board believes that protection of the public by proper closing of the landfill and the provision of water to the public that is safe for drinking and other uses are high priorities for both the Applicant and the State. ANR must now exercise its jurisdiction to ensure that closure of the landfill is begun immediately and that potable water is provided for both the short and long term to the people whose water supplies have and will become contaminated by the landfill.

VI. ORDER

Land Use Permit #3W0609-EB is hereby denied.

Dated at Montpelier, Vermont this 12th day of November, 1991.

ENVIRONMENTAL BOARD

Stephen Reynes, Acting Chair*
Elizabeth Courtney
Ferdinand Bongartz
Arthur Gibb*
Samuel Lloyd
Steve E. Wright
Rebecca Day
Charles Storrow

*Dissenting and Concurring Opinion of Stephen Reynes, joined by Arthur Gibb:

The majority cites the possibility of a provisional certification being granted under 10 V.S.A. § 6605d as one reason for moving the Applicant's proposal "from being marginally acceptable to a clear violation of Act 250's standards and a threat to the public health, safety and welfare." Subdivision (8) of that section provides, however, that any unlined landfill cease accepting waste by July 1, 1992, which is the same date which the Board had chosen its July 26, 1991 decision for cessation. Although subdivision (9) provides a possible avenue for extending the date for the closure of an unlined landfill for up to an additional six months, that, even if granted, would provide this Applicant with scarcely a year of operation, which is about the same length of operation as would have been allowed by the Board's July 26 decision. Thus the only basis for concluding that the landfill might stay open longer than contemplated in the original Board decision is speculation that the General Assembly might authorize an extension of the closure date for unlined landfills. An administrative body must base its decisions upon existing statutes, however, not upon speculation as to possible statutory changes. See In re Agency of Administration, 141 Vt. 68, 76 (1982). That principle is fundamental to the rule of law.

This decision deletes Finding 47 of the Board's July 26 decision, in which the Board found: "Any contamination that would occur from the operation of the landfill for another year would not be distinguishable from the contamination that has already occurred from its previous 15 years of operation and would not measurably extend the problems already created." Noting that there is no new evidence on this point, we do not think there is a basis for deleting the finding.

In any event, however, the Applicant has not met its burdens under Criterion l(B) of Act 250 with regard to the need for a discharge permit and compliance with the Groundwater Protection Act and the rule adopted thereunder. While agreeing with the legal analysis set forth in the majority opinion on those issues, we wish to add some additional thoughts in concurrence.

The Groundwater Protection Act of 1985 was envisioned and enacted as an ongoing comprehensive groundwater risk management program, to be integrated into other regulatory programs. Risk management would occur within four groundwater classifications, ranging from Class I (basically pristine waters, allowing no risk to an existing or potential public water supply) to Class IV (water not potable, but usable for some purposes). While all groundwaters were given an initial designation of Class III, the Act contemplated and provided for reclassification as part of the ongoing groundwater management program. 10 V.S.A. §§ 1392-94. The legislative history provides further illumination. For instance, groundwater around landfills was given as an example of what would be Class IV groundwater. See testimony of Senator Arthur Gibb to the Senate Agriculture Committee on March 26, 1985, Transcript at page six. Also, see generally the transcripts of testimony on this bill (S.ll) in the Senate Agriculture Committee on March 29, 1985, and in the Senate Committee on Natural Resources and Energy on March 19 and April 17, 1985.

One problem is that no groundwater has been reclassified and thus the groundwater around all landfills is still Class III--a standard that this landfill, and probably all unlined landfills, cannot meet.

It is not the Applicant's fault that the State has not reclassified any groundwater, and it is not the Applicant's fault that ANR has not administered a discharge permit program for unlined landfills. It is thus a conclusion come by somewhat reluctantly that the Applicant has not met its burdens under the requirements of Criterion l(B), but we agree

with the majority's legal analysis on these issues, and the burden of proof is on the Applicant to show compliance. 10 V.S.A. §§ 6086(a)(l)(B) and 6088(a).

This is not to throw stones at ANR either. That Agency, in response to a broad range of environmental and health concerns, has been given many demanding responsibilities without sufficient support. That situation is exacerbated by the State's budget problems.

None of the foregoing gives us the latitude to grant a permit when a review of the law leads us to conclude that the involved laws and regulations have not been satisifed. What is needed is a comprehensive review of the various requirements for solid waste facilities. To the extent that process review points to the need for administrative or statutory changes, those changes should be made so that there is a fully integrated regulatory system for solid waste facilities. Another goal should be that all related reviews by the executive department should be in place prior to reaching this stage in the Act 250 process by requiring that the various regulatory actions and criteria must be satisfied before an Act 250 permit is issued.

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